

The left pleura was continuous with the pericardial sac, the heart lying in the cavity of the former, and in parts adhering to the lung itself. A small rudimentary pericardium was connected with the right pleura, and opened by a small orifice into the left. The patient had died of disease of the heart.

7. *Direction of the Uterus in Little Girls.*—M. A. PORCHAT, Interne to the Foundling Hospital, in an interesting note read to the "*Société de Biologie*" in August last states "That the great number of autopsies daily made in the Foundling Hospital has given me the opportunity of investigating the direction of the uterus in very young female children. The greater number of those examined were about two years of age: some were only a few days old. In the majority the uterus was antiflexed, and I am inclined to believe with M. Boulard, that this direction most usually exists. Nevertheless, I have several times seen retroflexion. In some instances the retroflexion was very evident. I have presented to the Society a uterus so retroflected, that the superior portion had fallen back so as to become nearly parallel to the inferior portion. But retroflexion is not always so marked; the specimen which I presented, was pronounced by high authority to be simply retroverted, it being considered that there was no twisting of the neck of the organ. I believe still that the body and the neck formed an obtuse angle, and that the uterus was therefore retroflected. The direction of the uterus depends in some degree upon the situation of the rectum; when the rectum deviates much to the right, the uterus falls directly backwards; but it may, under other circumstances, undergo a lateral deviation. The appendages of the uterus occupy very different positions. The flexion of the uterus is not in my opinion the result of cadaveric alterations, and the degree of flexion has no relation to the distension of the intestine by gas. I have seen the uterus flexed in subjects where the intestine was not distended at all; and it, therefore, is probable that the cause of its direction is to be sought in the particular disposition of the tissue of the organ. The uterus in infants is soft, and falls naturally upon itself; and we have no right to regard this circumstance otherwise than as normal, and we cannot attribute to the organ any one fixed position. In the greater number of instances, however, it was antiflexed.—*Gazette Médicale de Paris*, Nov. 25, No. 47.

ORGANIC CHEMISTRY.

8. *Gastric Juice.*—GRUNEWALD and SCHROEDER have made some observations on this fluid obtained from a peasant woman affected with fistula of the stomach. The woman was otherwise healthy, 35 years of age, weighed 53 kilogrammes, and was, at the time of observation, nursing a child; the fistula had existed for two or three years, and was caused probably by a perforating ulcer of the stomach. The quantity of the gastric juice, after abstraction of the saliva (65 grammes per hour), was computed at 584 grammes (=19 oz. nearly) for every hour, or 14,016 kilogrammes (=22½ imperial pints nearly) for the day, which is about the fourth part of the weight of the whole body, a proportion much larger than that given by Bidder and Schmidt (6·4 kilogrammes for an individual weighing 64 kilogrammes); 1 kilogramme of weight of a man would secrete, according to this calculation, 264 grammes (=8½ ounces nearly) of gastric juice in twenty-four hours. The smallest proportion was obtained in the morning (state of fasting), being, however, even then not less than between 40 and 400 grammes per hour. The fluid collected at that time was, in general, thin, serous, colourless, and clear; at other periods it was more viscid, containing sometimes bile, without any accompanying signs of functional derangement; not rarely sarcina was detected in it by aid of the microscope. As regards the chemical constitution, according to the examination performed

¹ Die Verdauungsaefte u. der Stoffwechsel. Mitau und Leipzig, 1852, p. 36.

by C. Schmidt, the fluid obtained at an early hour of the morning (state of fasting) was either neutral or slightly alkaline; after the ingestion of food it was always acid. *Hydrochloric acid* was not found in any of the analyses of the various portions of the gastric juice secreted at different times of the day, but *butyric acid* and the presence of *lactic acid* became highly probable. The following table shows the numerical proportion of the single constituents; for the sake of comparison we add the figures given by Bidder and Schmidt for the gastric juice of the dog and sheep.

	MAN. Gastric juice mixed with saliva.	DOG. Gastric juice without saliva.	DOG. Gastric juice mixed with saliva.	SHEEP. Gastric juice mixed with saliva.
Water	956.595	973.062	971.171	986.147
Total solids	43.405	26.938	28.829	13.853
Organic substances	36.603	17.127	17.336	4.055
Inorganic substances	6.802	9.811	11.493	9.798
Single substances:				
Hydrochloric acid	—	3.050	2.337	1.234
Chloride of potassium	—	1.125	1.073	1.518
Chloride of sodium	4.633	2.507	3.147	4.369
Chloride of calcium	—	0.624	1.661	0.114
Chloride of ammonia	—	0.463	0.537	0.473
Phosphate of lime	0.961	1.729	2.294	1.182
Phosphate of magnesia	0.260	0.226	0.323	0.577
Phosphate of iron	0.006	0.082	0.121	0.331
Potash, belonging to the } organic substances	0.363	—	—	—

The organic substances consisted of coagulable albuminous substance (pepsin), sugar, butyric acid, uncoagulable proteinaceous substances, and lactic acid. The organic acids are not considered as originally present in the secretion of the stomach, but as products from the ingested aliments; they are changeable in quantity according to the quality of food. The hydrochloric acid, on the contrary, was considered as an essential component, although it is not exhibited by the analyses, probably on account of its being so easily bound by the alkalies of the saliva. In an analysis performed at a period, the results of which are communicated in the appendix, Schmidt actually found free hydrochloric acid, but only in the proportion of 0.2 in 1000 parts—a proportion ten times smaller than in the dog. Concerning the question, whether the gastric juice prevents the saliva from transforming starch into sugar (as asserted by Bidder and Schmidt) the authors found that the action of the saliva is not annihilated; they confirm, however, the observation of Bidder and Schmidt, that no sugar is detected in the stomach of the dog even after the ingestion of boiled starch.

The digestion of *proteinaceous food* was examined by introducing weighed pieces of coagulated albumen, meat, &c., in thin linen bags through the fistula into the stomach, and observing both the loss of substance within a certain space of time, and the changes in the microscopic structure of the elements. Thus it was found that, for proteinaceous substances, the dissolving power of the gastric juice of man is far inferior to that of the dog; their solution is completed in the stomach of the dog within two to four hours, in that of man it requires nineteen to twenty hours. Raw meat is better digested by the stomach of man than boiled meat, and veal better than beef.

Concerning the *microscopic alterations*, they found after one hour and a half the primitive fasciculi easily separable from each other, without change in themselves, the sarcolemma destroyed; after two hours and three quarters, the primitive fasciculi commenced to exhibit transverse fissures; after three hours, only transversely striated lamellæ were visible; after three hours and a half, besides the quadratic lamellæ, many primitive fasciculi, fissured in longitudinal and transverse direction, frequently dentated at the extremities; after three hours and three quarters, the primitive fasciculi twice or three times divided in the longitudinal direction; after four hours and a half, scarcely any

solid remains left in the stomach, except some few primitive fasciculi much fissured in the longitudinal and transverse direction, still, however, exhibiting the transverse striæ. After three and a half to four hours the stomach is, in general, empty: the proteinaceous substances become therefore subject to the influence of the enteric secretion, &c. As regards the digestion of *fat*, the membrane of the cells was dissolved in the stomach; but the fat itself did not undergo any alteration. *Milk*, after three quarters of an hour, formed a thick coagulum, inclosing a large quantity of milk globules and free fat; after two and a half hours, the casein was seen partly as amorphous substance, partly in transparent, membrane-like pieces, with some unchanged milk globuli; after three hours and three-quarters scarcely any remains were left in the stomach.

These alterations, which required in the stomach of this woman three hours and three-quarters to four hours and a half, were completed in that of a dog within two hours.

Finally, the authors allude to the great importance of the secretion of the gastric juice for the intermediate circulation of fluids and the intermediate change of matter, the principal object of which is to economise in the animal household, by prolonging the series of changes to which animal matter is submitted within the organism, and thus to render it for a longer time efficient in the discharge of vital processes. We find ourselves more compelled to adopt this view, as the quantity of the secretion amounted, in this instance, to one-fourth of the weight of the whole body.—*B. & F. Med.-Chirurg. Rev.*, Jan. 1855.

9. *Pancreatic Fluid*.—KROEGER gives the results of some experiments performed by Prof. BIDDER on this fluid. Through a fistula in the pancreatic duct they collected the pancreatic juice during certain spaces of time at various periods of the day and under various influences. Concerning the quantitative relations, 1 kilogramme of dog secretes, on the average, within twenty-four hours, about 89.3 grammes of pancreatic juice. According to this calculation, an adult man (weighing 64 kilogrammes) would secrete, in twenty-four hours, 5.715 kilogrammes, i. e., nearly the eleventh part of the weight of the whole body. The ingestion of food exercises great influence over the secretion, the latter becoming much increased in quantity almost immediately after meals, reaching its maximum within about half to three-quarters of an hour after the meal, when it is about six or ten times larger than it had been just before the ingestion of food. Water has not the same effect: on the contrary, when taken simultaneously with solid food, it prevents the latter from causing so evident an increase. The concentration of the pancreatic juice appears frequently diminished in the same measure as the quantity is increased, but this phenomenon is not a constant one; and, at all events, the absolute quantity of solid substances is greater after meals than before.

As regards the physical and chemical character of the secretion the author does in general, agree with Bidder and Schmidt;¹ some differences, however, must be noticed. The specific gravity is, according to Kroeger, 1.01065, while Bidder and Schmidt had assumed 1.0306, and Frerichs 1.0082.² Further differences become apparent by comparing the following figures relating to 1000 parts of fresh juice.

	Kroeger. (Analysis by C. Schmidt.)	Frerichs.	Bidder & Schmidt.
Water	981.52	986.40	900.76
Solid matter	18.48	13.60	99.24
Organic substance	12.68	3.50	90.38
Inorganic substance	5.80	10.12	8.86

Concerning the *physiological action* of the juice, its power of transforming starch into sugar is not doubted. According to the author's experiments, 1 gramme of the fresh juice transforms within half an hour, under the influence

¹ l. c. p. 244.

² Wagner's Handwörterbuch der Physiologie, iii. p. 844.

of a temperature of 35° C., 4.672 grammes of dry starch into sugar; as 1 gramme of fresh juice contains 0.014 grammes of pancreatic ferment, one gramme of this ferment would transform 333.7 grammes of dry starch. If we assume, with Frerichs, that an adult man requires daily about 490 grammes (=15 ounces nearly) of starch to compensate the daily loss of carbon, the quantity of pancreatic juice necessary for the transformation of this starch into sugar would be less than 105 grammes, while the quantity actually secreted amounts to more than 5000 grammes. Kroeger is therefore of the same opinion with Bidder and Schmidt—viz: that the pancreatic juice cannot have as its *principal* function the transformation of starch into sugar. As one of the functions, he considers the promotion of the constant interchange of fluids within the body, in the same manner as Bidder and Schmidt have made it so probable concerning the saliva, and with Grunewald and Schroeder concerning the gastric juice. It further appears to him that an intimate connection exists between the secretion of the stomach and that of the pancreas—namely, that the hydrochloric acid secreted by the former is, after having performed its part, neutralized by the soda of the latter, thus again forming the chloride of sodium previously disunited by the process of secretion. In favour of this theory Kroeger observes that the hydrochloric acid secreted by 1 kilogramme of dog through the gastric juice in twenty-four hours amounts to 0.305 grammes, while that of soda contained in the pancreatic juice of twenty-four hours is calculated at 0.237 grammes, i. e., very nearly the equivalent (0.259) corresponding to 0.305 grammes of hydrochloric acid.—*Ibid.*

MATERIA MEDICA AND PHARMACY.

10. *On Digitaline.*—Prof. CHRISTISON states (*Monthly Journal of Medicine*, January, 1855) that his experience of the effects of digitaline has been highly satisfactory. I have, he says, used it expressly as a diuretic only; but its sedative virtues have also come incidentally under observation; and it is quite evident that digitaline is a most energetic remedy in both ways.

In the first two trials made with it, which were both of them in cases of extensive, protracted, obstinate œdema in connection with disease of the kidneys, diuresis commenced, in one towards the close of the second day, and in the other a day later; in both the flow of urine was profuse: and in both the œdema entirely disappeared, but with the slowness not uncommonly observed in this form of dropsy.

Here I cannot help observing in passing, that a striking illustration was presented, on both these occasions, of the unsoundness of the objection which has been brought by many practitioners, since it was first propounded by Dr. Osborne, against the use of diuretics in the renal forms of dropsy. I have taken every opportunity, in my clinical lectures, and in occasional publications, to protest equally against the unsoundness of the theory and the looseness of the facts, which have led to the prohibition of diuretics in renal dropsy, and which have deprived many persons of the most immediate and most efficacious means of relief from the principal secondary affection occurring in Bright's disease of the kidneys. And I may here repeat, in the strongest terms, that I have never, except in a single instance, seen the albuminosity of the urine, or any other indications—which either the other conditions of the urine or any other local symptoms can furnish—increased under the employment of such diuretics as I have given in this disease. These are digitalis, squill, and bitartrate of potash, sometimes singly, more commonly combined. What may be the case with other diuretics I shall not pretend to decide. I strongly suspect that they are all in the same category, and that they have been shunned on grounds purely theoretical and baseless. But at any rate I can answer for the theory not holding in the case of the three diuretics I have mentioned. So, too, in the case of digitaline. It is not a little remarkable that in the first two patients to whom